SCORESBIA A NEW HYDROID GENUS FROM SOUTH AUSTRALIAN WATERS

by JEANETTE E. WATSON*

(Communicated by S. A. Shepherd)

[Read 11 September 1969]

SUMMARY

A new genus and species of hydroid, *Scoresbia daidala* from South Australian (Flindersian) waters is described. Differences and affinities with related genera are discussed, and ecology noted.

Family HALECIIDAE Hincks, 1868

Genus SCORESBIA n.gen.

(Generic name, derived from a personal name)

DIAGNOSIS

Hydrotheca borne singly on a pedicel arising directly from a creeping stolon; hydrotheca much the same diameter as the supporting pedicel and too small to lodge the retracted hydranth; hydrotheca impunctate. Hydranth with a single row of filiform tentacles. Nematothecae restricted to stolon. Reproductive zooid a fixed sporosac.

Type species: *Scoresbia daidala* n.sp.

GENERIC RELATIONSHIPS

The new genus *Scoresbia* differs from all other sporosac and nematothecae bearing haleciid genera in possessing a constantly simple unbranched pedicellate stem and nematothecae seated on the stolon at the base of the stem. It shows some affinities with *Phylactotheca* Stechow 1913, particularly *P. armata* Stechow 1924 in the shape of the hydrophores, lack of punctae and heavily ridged stem; with some sypecies of *Ophiodissa* Stechow 1919, in the lack of differentiation of the base of the hydrophore from the pedicel, and general size, e.g. *O. mirabilis* (Hincks 1868) and with the aberrant *O. carchesium* Fraser 1914 which has nematothecae scattered on the stolon. (The hydrophores in this species, however, are subsessile, and the gonosome is unknown.)

Blackburn 1938 united the three sporosac and nematothecae bearing haleciid genera *Ophiodes* Hincks 1866, *Diplocyathus* Allman 1888, and *Ophiodissa* Stechow 1919 in the single genus *Hydrodendron* Hincks 1874. This was followed by Millard (1957), Ralph (1958), and Rees and Thursfield (1965). Vervoort (1959), however, retained the genus *Hydrodendron* for those forms lacking nematothecae, and assigned to *Ophiodissa* those forms with protective structures surrounding the nematophores.

Blackburn considered the validity of *Phylactotheca* to be doubtful but allowed it to stand because of the campanulate shape of the hydrophore, differentiation of the hydrophore from the supporting pedicel and lack of the marginal ring of puncta. He considered the shape and disposition of the nematothecae, used by

* 74 Nimmo Street, Essendon, Victoria.

Stechow as a basis for division of these genera, to be of little value. Nevertheless, the presence of nematothecae on the pedicel below the hydrophore in some parts of the colony at least, has long been accepted by authors as a diagnostic character.

Thus, *Hydrodendron*, *Ophiodissa* and *Phylactotheca* as generally understood, accommodate forms having shallow to deeply campanulate hydrophores, sometimes with a marginal ring of puncta. Nematothecae ranging from bell shaped to tubular are normally situated on the hydrothecal pedicel but may be additionally scattered on stem and stolon. Also, by definition, these genera relate only to branched forms (that is, those forms normally bearing at least two separate hydrophores on a stem) which may be either monosiphonic or fasicled (Leloup 1930, p. 6). However, in some species it is not unusual to find single hydrophores arising directly from the stolon (Millard 1958, p. 186) but these are probably young stems in the developmental stages and are always found interspersed among mature branched stems.

In summary, although the retention of the genera *Ophiodissa*, *Hydrodendron* and *Phylactotheca* clears up to some extent the nomenclatural difficulties surrounding the sporosac and nematothecae bearing haleciid genera, a review of this group is indicated. Whilst showing some affinities with these genera, *Scoresbia* bears no close relationship to any of them in characters of fundamental importance.

Scoresbia daidala n.sp.

(δαιδαλος—beautifully wrought, referring to the stolons and hydranth)

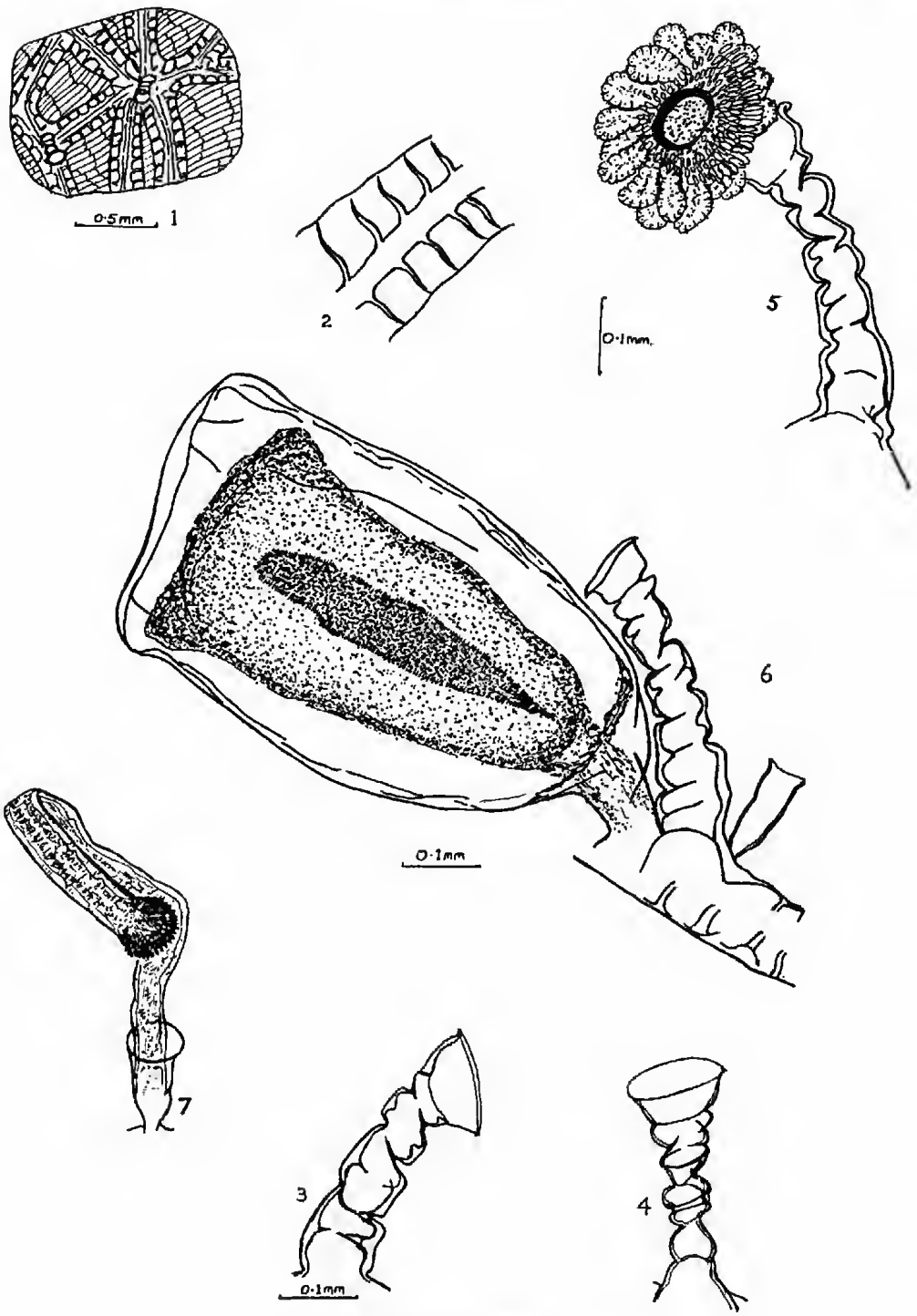
Description from the Holotype and paratypes microslides.

HYDRORHIZA: a reticular network, very wide, flat and ribbon-like, strongly attached to the seaweed on which it grows (Fig. 1); divided into a central inner canal and wide outer flanges. Distinct, close, dark coloured spine-shaped markings transverse between outer and inner margins of flange (Fig. 2). Hydrorhiza widening towards base of each hydrothecal pedicel.

STEM: simple, short, erect, arising mainly at the junctions where the stolons cross; unbranched, widest at base, tapering distally, passing into hydrophore with a small constriction at narrowest part. Perisarc of stem thick, heavily ridged internally and three or four very deep oblique external constrictions dividing stem into segments, the largest at the base, becoming progressively smaller distally, the last supporting the hydrophore (Figs. 3, 4). Stem bending in a gentle curve toward distal end, bringing plane of margin of hydrophore almost perpendicular to hydrorhiza.

HYDROPHORE: small, bowl shaped, asymmetrical, the abcauline side usually a little longer than the adcauline side; expanding in a sinuous curve to an everted circular margin. Diaphragm present, extending across base of hydrophore in a shallow curve frequently not well seen, but position marked by a shoulder-like ledge and distinct notch in perisarc on the abcauline side and sometimes on adcauline side (Fig. 3, 5). No reduplication of margin; punctae not present; no secondary or tertiary hydrophores developed.

Fig. 1, hydrorhiza network on alga;
Fig. 2, hydrorhiza enlarged, showing markings;
Fig. 3, 4, hydrothecal pedicel; fig. 4 anterior view;
Fig. 5, extended hydranth with lenticular nematocysts;
Fig. 6, from Holotype; stem, nematotheca, and nearly mature male gonotheca, group chosen to show relative sizes, but nematotheca displaced further behind hydrothecal pedicel than usual.
Fig. 7, nematotheca and extended nematophore.



Scoresbia daidala n.sp.
Drawn from holotype and paratypes.

HYDRANTH: body thick, too large to fit retracted into hydrophore. Only slightly constricted below tentacles; tentacles stubby, 20 to 24 set in a circlet about a wide hypostome. A fringe of "lenticular nematocysts" packed about four deep surrounds hypostome at base of tentacles (Fig. 5).

NEMATOTHECAE: small, elongate urn shaped, with slightly everted margin, arising from flange of hydrorhiza usually under curve of stem directly below hydrophore, only present in younger parts of colony. Nematophore very extensile, capitate head set with nematocysts (Fig. 7).

GONOTHECA: large, obovate, smooth, somewhat flattened, tapering proximally into a short, slightly bent pedicel arising from the hydrorhiza at the base of the hydrothecal pedicel below curve of stem (Fig. 6). Width increasing to distal end; truncated by a slightly convex cap; no orifice, the contents emptied by rupture of the distal end. Male end female gonotheca same shape and size, borne on same colony.

GONOPHORES: Mature colonies bear gonangia thickly. Gonophores tend to grow in groups of the one sex, males outnumbering females in colony by at least five to one. Mature male gonophore comprises a mass of spermatogenic tissue almost filling gonotheca, supported by a blastostyle which expands in a cap across the distal end. Mature female gonophore composed of a cluster of 11 to 15 creamy coloured eggs with large yolk spots, almost filling gonotheca, surrounded by a thin blastostyle which spreads in a pinkish mass across distal end.

Mature gonophores, December to January St. Vincent Gulf (water temperature 22° C.).

Colour: perisarc pale straw colour, hydranths white.

DIMENSIONS:

(all dimensions given in mm.)

HYDRORHIZA	
maximum width	0·20-0·26
width of flange	0·05-0·09
PEDICEL OF HYDROPHORE	
length to base of hydrophore	0·24-0·37
width at junction with hydrorhiza	0·07-0·09
HYDROPHORE	
diameter at margin	0·09-0·14
diameter at diaphragm	0·07-0·08
length abcauline side (diaphragm to margin)	0·05-0·07
length adcauline side (diaphragm to margin)	0·03-0·05
NEMATOTHECA	
diameter at margin	0·05-0·06
length from base to margin	0·10-0·13
NEMATOPHORE	
maximum extended length	0·70
diameter of head	0·06-0·09
GONOTHECA	
length, excluding pedicel	0·66-0·92
greatest width	0·42-0·54
length of pedicel	0·06-0·09
HYDRANTH	
tentacle width	0·025
LENTICULAR NEMATOCYSTS	
length	0·02
width	0·005

TYPE MATERIAL AND LOCALITIES

A series of seven microslides, designated Holotype, and six paratypes, and preserved material is lodged in the National Museum of Victoria, Melbourne. One microslide, designated paratype is lodged in the South Australian Museum, Adelaide.

N.M.V. Reg. No. G1490 Holotype: 3 km. off Semaphore, St. Vincent Gulf, South Australia, on *Zonaria crenata*; depth 7 m.; coll. J.E.W.° 28/12/68.

N.M.V. Reg. Nos. G1491; G1492; G1493; G1494; S.A.M. Reg. No. H.20 paratype, from same colony as Holotype. Material fertile.

N.M.V. Reg. Nos. G1495; G1496, paratypes: West Island, Encounter Bay, South Australia: on *Zonaria crenata*: depth 25 m.; coll. J.E.W.° 29/8/68. Material infertile.

N.M.V. Reg. No. G1497: formalin preserved material, remainder of material from type locality, including fragment figured in Plate 1. Other localities: Lawrence Rocks, Portland, Victoria: on *Zonaria crenata*: coll. J.E.W.° 14/5/69. Material infertile.

REMARKS

This minute, delicate species exclusively epiphytises *Zonaria crenata*, a small brown alga ranging from central Victorian to Western Australian ocean waters, and commonly in South Australian gulf waters, in depths of 5-25 m. The association is so constant that the species of alga may be determined by the presence of the hydroid (Womersley, 1967, p. 226). Hydrophore, gonotheca, and nematotheca are very deciduous, brushing off at a touch, leaving only the stems and distinctively patterned stolons behind. Each stem curves stiffly forward at a remarkably constant angle. The asymmetrical nature of the hydranth, with foreshortening of the adcauline side further accentuates this forward bend so that the hydranth faces directly toward the growing front of the colony at the edge of the algal frond. The gonangia also share this directional growth habit; each pedicel is slightly bent, bringing the gonotheca close to the surface of the seaweed, with distal ends all pointing to the front of the colony.

The nematothecae are not often seen with the gonothecae, having dropped off the older parts of the colony, leaving no observable scars. When both are present, they are seen to be very close together, the gonothecal pedicel arising from the central canal of the hydrorhiza at the base of the stem, and the nematotheca a little to one side, on the flange of the hydrorhiza.

The thick fringe of lenticular nematocysts surrounding the hypostome has been reported previously by Ritchie (1910, p. 808) who drew attention to a "ring of very large bean shaped nematocysts 30μ long by 6μ broad surrounding the hydranth" in *Halecium simplex* Pictet, 1893, and by Huve, 1954, who reported similar large nematocysts in the intertentacular web of *Hydranthea margarica* (Hincks, 1863), *H. aloysii* (Zoja, 1893) and *Campalecium medusiferum* Torrey, 1902 (= *H. simplex*). The nematocysts of the present species fall within the size range described by these authors.

In examination of a large number of specimens I have found the hypostome to be a wide, open annulus; occasionally flatly conical. The shape observed evidently depends on the state of retraction at the time of preservation (a condition also noted by Leloup, 1939) and is therefore a character of doubtful systematic value.

The stolons can be removed with difficulty from the seaweed after treatment with hot 10% Potassium hydroxide. Viewed from the underside, the spine-shaped

(° All material collected by author, using SCUBA.)

markings are seen to be walls dividing the flanges into hollow box-like compartments. Possibly their function is to strengthen the hydrorhiza and to give added flexibility with the movements of the seaweed in the water.

ACKNOWLEDGEMENTS

I am grateful to the Director, Mr. J. McNally, and Dr. B. J. Smith of the National Museum, Melbourne, for providing facilities, and allowing me access to the hydroid collections; to Dr. H. B. S. Womersley, Botany Department, University of Adelaide, and Mr. S. A. Shepherd, who first drew my attention to this hydroid, and to the Trustees of the C.S.I.R.O. Science and Industry Endowment Fund for financial assistance in the form of a Research Grant.

REFERENCES

ALLMAN, G. J., 1888. Report on the hydroida. Pt. II, Rpt. Sci. Res. H.M.S. "Challenger" Zoology XXIII (LXX), 90 pp.

BLACKBURN, M., 1937. Reports of the McCoy Society, II., Coelenterata. Proc. Roy. Soc. Vict. n.s. 49, pp. 364-381.

BLACKBURN, M., 1938. The Hydrozoa of the Sir Joseph Banks Islands. Proc. Roy. Soc. Vict. n.s. 50(2), pp. 312-328.

FRASER, C. Mc., 1914. Notes on some Alaskan hydroids. Trans. Roy. Soc. Canada (3) Vol. VIII, pp. 217-222.

HINCKS, T., 1866. On *Ophiodes*, a new genus of Hydroid. Ann. Mag. Nat. Hist. (3) Vol. 18, pp. 421-423.

HINCKS, T., 1868. A history of the British hydroid zoophytes. John Van. Voorst. London. 338 pp.

HINCKS, T., 1874. Notes on Norwegian hydroids from deep waters. Ann. Mag. Nat. Hist. (4) Vol. 13, pp. 125-139.

HUVE, P., 1954. *Hydranthea* et *Campelecium* genres Mediterraneens aberrants d'hydroids de la famille des Haleciides. Recl Trav. Stn mar. Endoume. 1954.

LELOUP, E., 1930. *Diplocyathus minutus* nov.sp. nouvel hydraire de la Mediterranee occidentale. Bull. Mus. Roy. d'Hist. Nat. de Belgique. VI No. 6.

LELOUP, E., 1939. Notes sur quelques hydropolypes exotiques. Bull. Mus. Roy. d'Hist. Nat. de Belgique. XV No. 51, pp. 1-19.

MILLARD, N. A. H., 1957. The hydrozoa of False Bay, South Africa. Ann. South Afr. Mus. Vol. XLIII, Pt. IV. 6.

RALPH, P. M., 1958. New Zealand thecate hydroids. Pt. II. Trans. Roy. Soc. N.Z. Vol. 85, Pt. 2, pp. 301-356.

RITCHIE, J., 1910. The marine fauna of the Mergui Archipelago. The hydroids. Proc. Zool. Soc. London, 1910, pp. 799-825.

REES, W., and THURSFIELD, S., 1965. The hydroid collections of James Ritchie. Proc. R. Soc. Edinb. Vol. LXIX, B, pts. I. II.

STECHOW, E., 1913. Hydroidpolypen der Japanischem Ostkuste. Abh. Math-phys. Akad der Wissensch. Supp. Bd, iii, pp. 162.

STECHOW, E., 1919. Zur kenntnis der hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete, Zool. Jahrb. Jena Syst. 42, pp. 1-172.

STECHOW, E., 1924. Diagnosen neuer hydroiden aus Australien. Zool. Anz. 59, pp. 57-69.

STECHOW, E., 1925. Hydroiden von West und Sudwestaustralien. Zool. Jahrb. Jena. L., pp. 191-269.

VERVOORT, W., 1959. The hydroida of the tropical west coast of Africa. Atlantide Rep. 5, pp. 211-325.

WOMERSLEY, H. B. S., 1967. A critical survey of the marine algae of Southern Australia. II Phaeophyta. Aust. J. Bot. 15, pp. 189-270.